



Stroke in Iowa

What is stroke?

Stroke is the No. 4 cause of death in the United States, behind diseases of the heart, cancer and Chronic lower respiratory disease (2008).

A stroke occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bursts. When that happens, part of the brain cannot get the blood (and oxygen) it needs, so it starts to die.

Types of stroke:

- **Ischemic stroke** occurs as a result of an obstruction within a blood vessel supplying blood to the brain.
- **Hemorrhagic stroke** occurs when a weakened blood vessel ruptures.
- **TIA** (Transient Ischemic Attack) often called a “mini stroke”. These warning strokes should be taken very seriously. TIA is caused by a temporary clot.

(<http://www.strokeassociation.org/STROKEORG/AboutStroke>)

Iowa Ranking Nationally in Stroke Mortality Rate

24 out of 51 states and DC with a higher number representing a higher death rate (2007).

Significant Findings from Mortality Data:

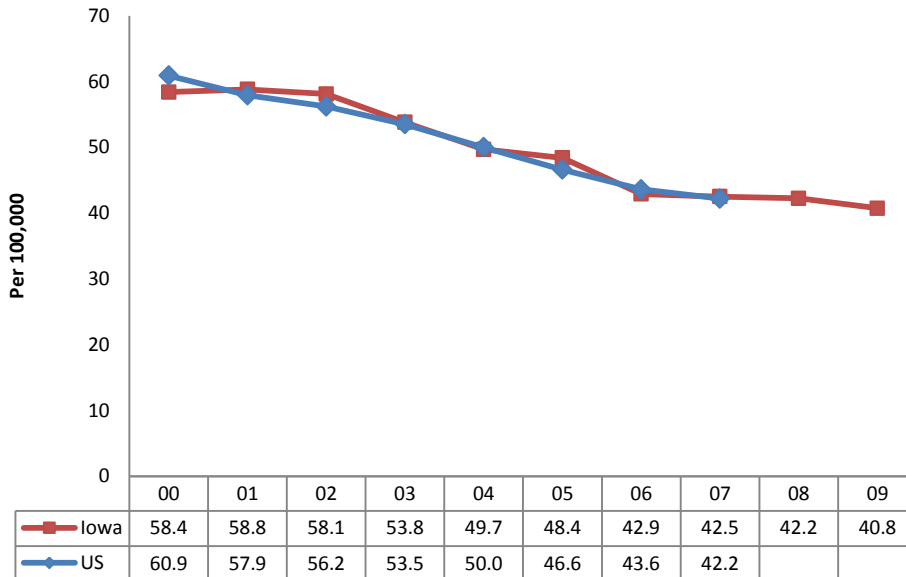
In the past decade, the Iowa stroke death rate has been reduced by 30%. The new goal for the next ten years is to reduce the stroke death rate by 20%. Continued large decreases in mortality may not be sustainable. Focus should be more on controlling risk factors and improving the quality of life for survivors.

Quick Facts

- Since 2008, stroke dropped from the No. 3 cause of death in Iowa to No 4. By gender, stroke is still the No. 3 cause of death for Iowa women.
- The Iowa stroke death rate decreased by 30% from 58 deaths/100,000 in 2000 to 41 deaths/100,000 in 2009.
- Stroke caused 1,627 deaths among Iowans in 2009 – that’s about one stroke death every five hours and 6% of all deaths in the state.
- Stroke kills more young men than young women: 14% of men vs. 6% women who died of stroke were younger than age 65 (2009).
- Ischemic strokes, which were 61% of stroke deaths in Iowa (2009), had the highest decrease rate (40%) from 1999 to 2007.
- Hemorrhages, which were 15% of stroke deaths in Iowa, had the lowest decrease rate (8%) in the same period of time.
- Iowa stroke death rates were slightly lower than the national averages since 2004; and achieved the national Healthy People 2010 goal (48/100,000) earlier in 2006 (43/100,000).
- Stroke hospitalization showed a decreasing trend in Iowa, but the magnitude was less than the death rate. Since 2000 the stroke hospitalization rate has dropped by 15%.
- Different from stroke death rate, men had a 30% higher stroke hospitalization rate than women.
- The average inpatient cost for stroke in 2008 was \$9,282, which was 11% higher than in 2007.
- About 60,000 Iowans self-reported having a stroke (BRFSS, 2009), which was 2.4% of Iowan aged 18 and older.

Iowa Stroke Death Rate is close to the National Average

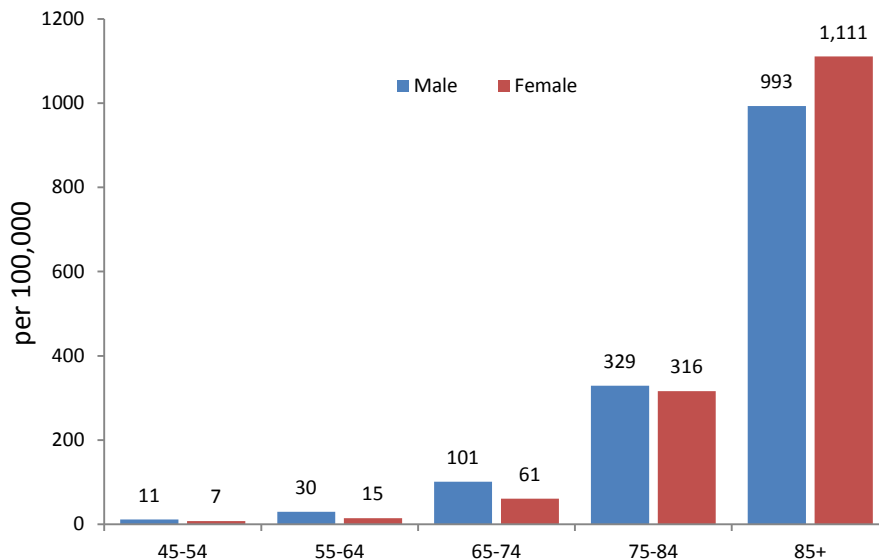
Age-adjusted Stroke Death Rate, Iowa vs. US



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Stroke Death Rate by Sex and Age, Iowa, 2009



More men than women died of stroke in the age groups <75 each year.

However, the women's total stroke deaths exceed the total number of men each year; more women died of stroke at age 85+.

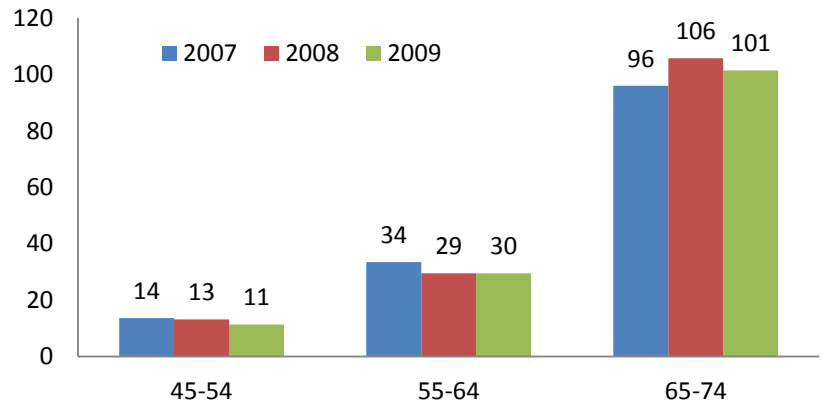
Stroke Kills More Young Men than Young Women

Before age 85, men had a higher stroke death rate in any age group and in any given year than that of women.

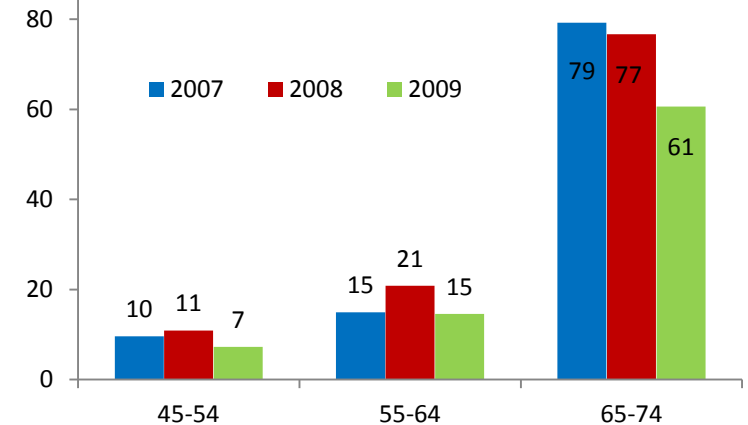
The rates for males aged 45-54, 55-64, 75-84 and for female 65-74 showed a decreasing trend during the past three years.

The rates for persons older than 85, both male and female, did not show any change (data not shown here).

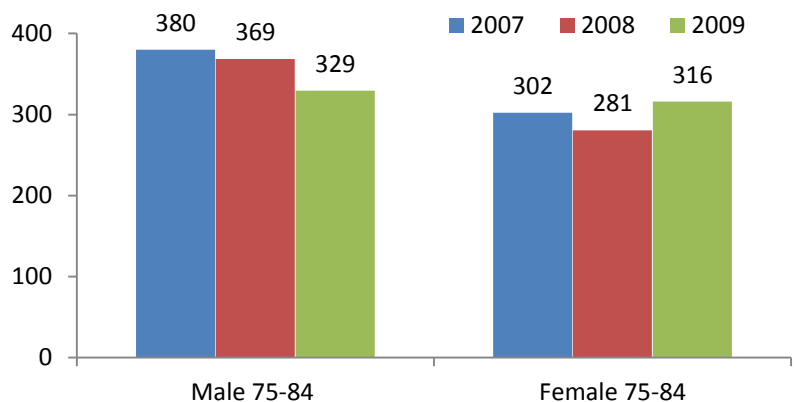
Male Stroke Death Rate per 100,000 by Age Group



Female Stroke Death Rate per 100,000 by Age Group, Iowa



Stroke Death Rate per 100,000 by Sex, Iowa

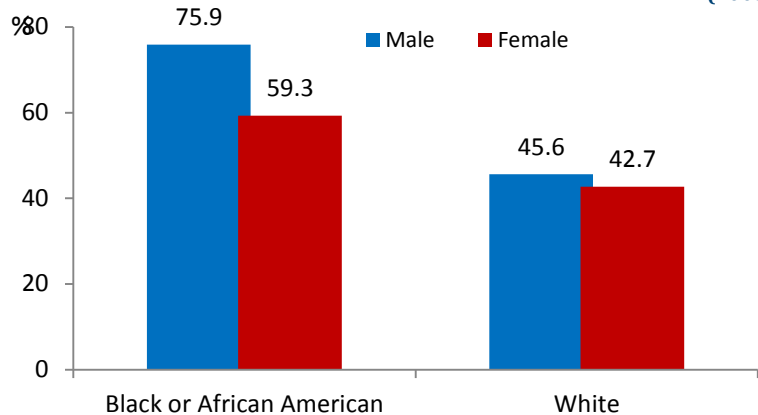


Health Disparities

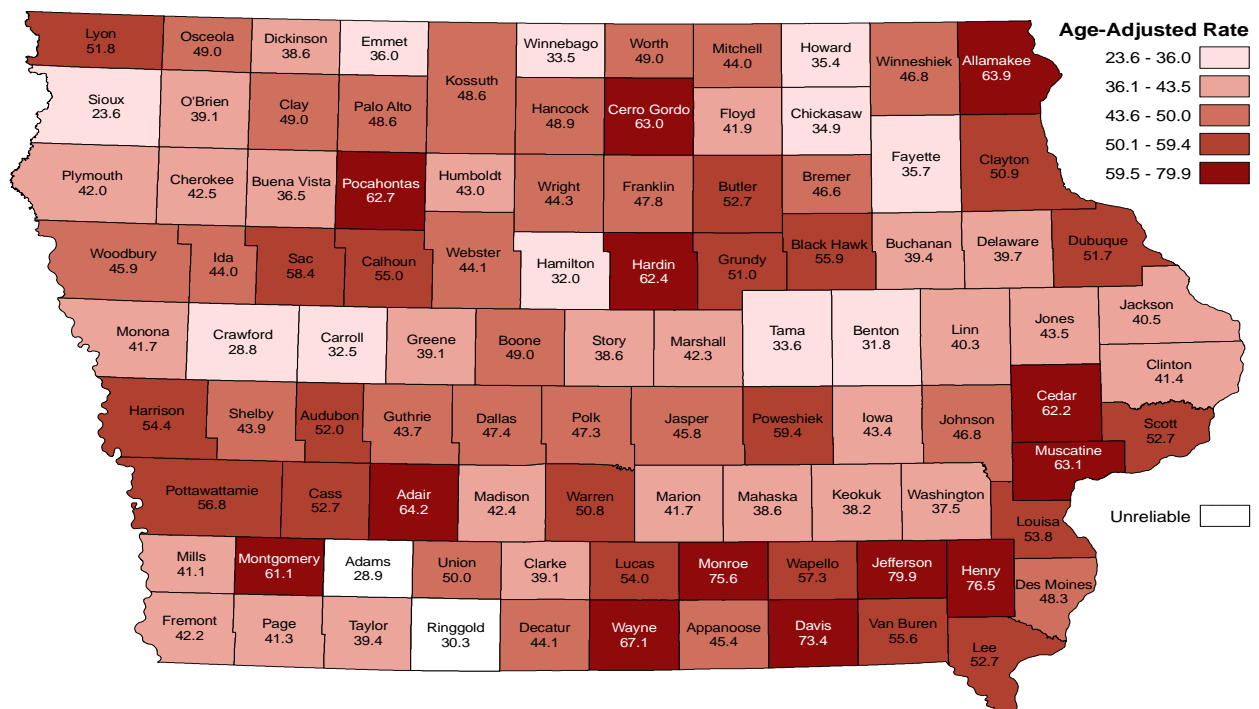
Black or African American men had a 66% higher stroke death rate (76/100,000) than White men (46/100,000) in Iowa.

Black or African American women had 39% higher rate (59/100,000) than the White females (43/100,000) in Iowa.

Age-Adjusted Stroke Death Rate by Race and Sex, Iowa, (2005-2007)



Age-Adjusted Stroke Death Rate by County, 2003-2007



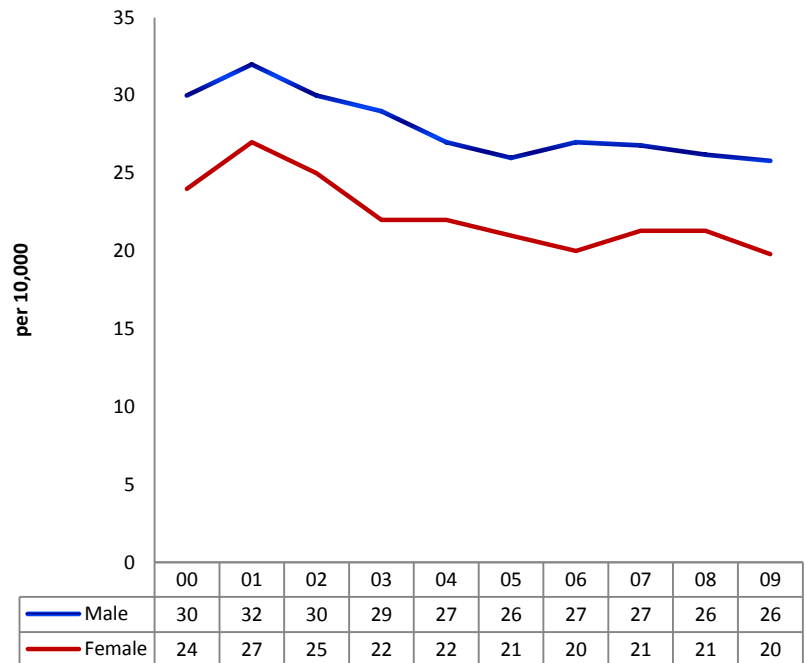
- Stroke death rates in 42 counties (2003-2007 average) were higher than the national Healthy People 2010 goal (48/100,000), while 55 counties had a stroke death rate below the national goal.
- Sioux county, in the northwest region, had the lowest stroke death rates (23/100,000), while Jefferson County in the southeast corner, had the highest stroke death rate (80).
- Ten counties had stroke death rates higher than 60/100,000, and seven of them were in southeast corner of the state.

Stroke Hospitalization

- Stroke hospitalizations showed a decreasing trend in Iowa, but the decreasing magnitude was smaller than the death rate. During 2000-2009, on average, there was a 2% annual decrease in the number of stroke hospitalizations.
- The stroke hospitalization rate in 2009 was 22.5/10,000, slightly lower than in 2008 (23.5/10,000).
- Unlike the stroke death rate, there is a big gap in stroke hospitalizations between genders: men (25.8/10,000, 2009) had a 30% higher stroke hospitalization rate than that of women (19.8/10,000).

Source: The years before 2007 are from Healthy Iowans. Iowa Chronic Disease Report. 2009.
http://www.idph.state.ia.us/apl/common/pdf/health_statis

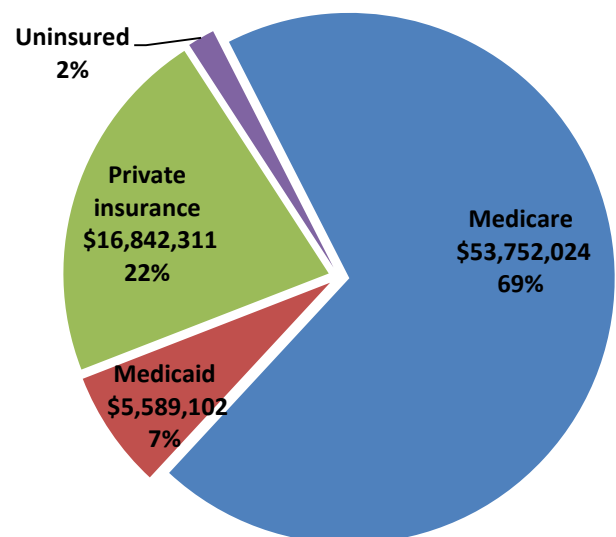
Iowa Stroke Inpatient Hospital Discharge Rate by Sex



- While the hospitalization rate was decreasing, the average inpatient cost was increasing; from \$8,340 in 2007 to \$9,282 in 2008; an 11% increase.
- In 2008, the total inpatient hospital costs were estimated at \$ 78.2 million, of which public funding, including Medicare and Medicaid, paid more than \$59 million (76%).

Source: Agency for Healthcare Research and Quality (AHRQ), based on data collected IHA. Total hospital charges were converted to costs using cost-to-charge ratios based on hospital accounting reports from the Centers for Medicare and Medicaid Services (CMS). 2008 cost estimate is the latest year available.

Iowa Stroke Inpatient Costs by Payer Source, 2008



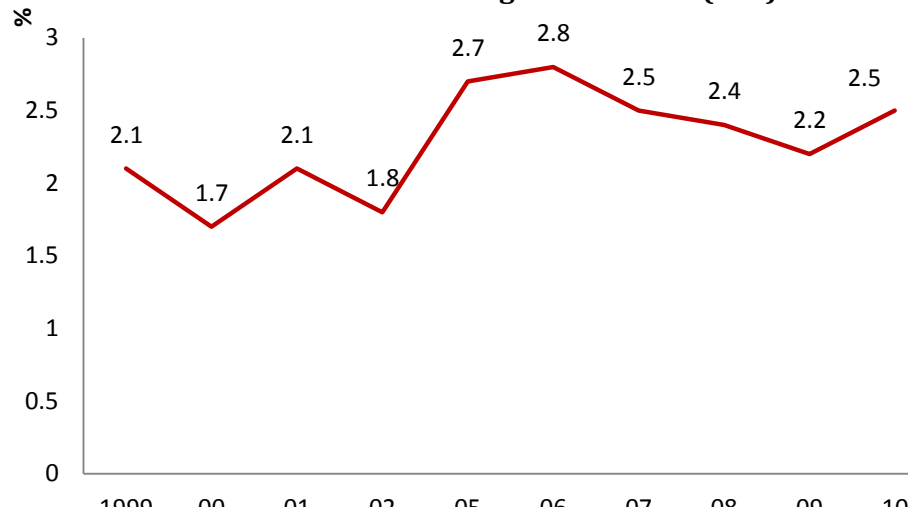
Stroke Prevalence

The stroke prevalence data is collected through the Behavioral Risk Factor Surveillance System (BRFSS).

In 2009, 2.5% of Iowans reported that they had been told they had a stroke, which represented 56,000 Iowan adults aged 18+.

In the past decade, Iowans did not show significant changes in stroke prevalence self-reporting. There is no significant difference between genders in the self-reporting.

Prevalence of stroke among Iowan adults (18+)



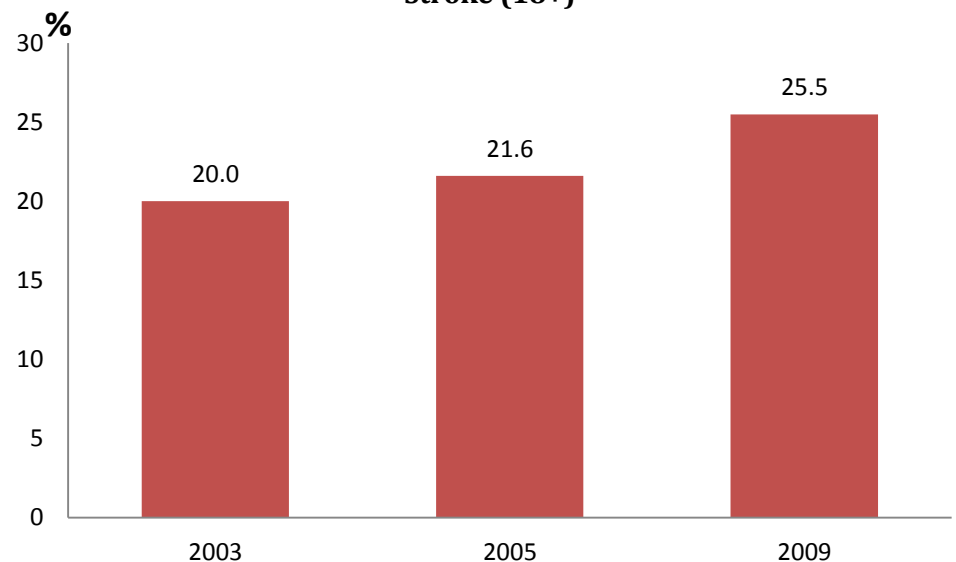
Sources: The years before 2008 are from <http://www.cdc.gov/dhds/>. The years of 2008-2010 are from Iowa BRFSS, Iowa Department of Public Health. Rates are age-adjusted based on self-report: 'have you ever been told by a doctor or other health professional that you had a stroke?'

Stroke Symptom Awareness (2009):

- 93.3% knew that sudden confusion or trouble speaking was a symptom;
- 94.8% knew that sudden numbness of the face, arm, or leg, especially on one side was a symptom;
- 74.5% knew that sudden trouble seeing in one or both eyes was a symptom;
- 89.5% knew that sudden trouble walking, dizziness, or loss of balance was a symptom;
- Only 64.4% knew that severe head ache with no known cause was a symptom of a stroke.
- Only 25.5% correctly knew all six symptoms of a stroke, which increased since 2003.

<http://www.idph.state.ia.us/brfss/common/pdf/2009BRFSSAnnual.pdf>. The rates in the six questions of symptom are crude rate.

Prevalence of recognition of signs and symptoms of Stroke (18+)



Sources: The year 2003 and 2005 are from <http://www.cdc.gov/dhds/>. The year 2009 is from Iowa BRFSS, Iowa Department of Public Health. Rates are age-adjusted based on correct responses to all of the six questions on the left. The questions were included only the three years as indicated above in Iowa BRFSS survey.



Making Use of this Information

Prevention and Control Strategies

In 2009, the Iowa Department of Public Health received a multiple year supplemental award of federal funding from the CDC to support the design and pilot implementation of a state stroke registry. IDPH plans to apply for CDC Paul Coverdell National Acute Stroke Registry (PCNASR) funding for an undetermined period beginning in 2012 that would, if funded, allow for full implementation of a stroke registry in Iowa.

Since 2008, the Iowa Department of Health has worked closely with other partners and members of the Iowa Stroke Task Force and the Iowa Cardiovascular and Stroke Task Force to improve the quality of Iowa's voluntary stroke triage system. This has allowed Iowa's Emergency Medical Services (EMS) personnel to triage and transport stroke patients to the hospital with the highest level of stroke care available within 30 minutes travel time.

The proposed stroke registry would serve as a central system to collect, compile, and analyze state stroke data. It would promote quality improvement of stroke systems of care in Iowa by linking the voluntary (EMS) records with the records of stroke care at Iowa's hospitals and eventually stroke rehabilitation records and death records. The overall intent of such a registry is to shorten the time between the onset of symptoms and receipt of the best possible care available. This in turn, will reduce overall stroke mortality and increase the survival of stroke patients so they can return to once again productive lives.

IDPH contracts with the University of Iowa - College of Public Health for the registry's design.

Who, besides IDPH, works on stroke prevention and control here in Iowa?

- Iowa Healthcare Collaborative
- Iowa Stroke Task Force
- American Heart/Stroke Association
- University of Iowa, College of Public Health
- Iowa Cardiovascular and Stroke Task Force

What are the implications of these findings?

- More Iowans need to be made aware of the signs and symptoms of stroke and the need for calling 9-1-1 immediately,
- Iowa needs to develop strategies for targeting younger males with education on maintaining healthy life styles and controlling risk factors for stroke.
- Iowa needs to continue its work towards developing a stroke system of care which will provide timely and evidence-based care for all stroke victims.

Healthy People 2020 Goal:

Reduce stroke deaths to 33.8/100,000

In 2009, the Iowa stroke death rate was higher than the new national Healthy People 2020 objective by 7 deaths/100,000 (40.8/100,000 vs. 33.8/100,000).

References:

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2. CDC WONDER <http://wonder.cdc.gov/>
3. Division for Heart Disease and Stroke Prevention: Data Trends and Maps at CDC website: http://apps.nccd.cdc.gov/NCVDSS_DTM/Default.aspx
4. Health in Iowa Annual Report from the 2009 BRFSS:
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5. State Statistics on All Stays at <http://hcupnet.ahrq.gov/HCUPnet.jsp/>
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